

Danmönensis, pseud. Dr. Cornish.

A N

A N S W E R

T O

Dr. *Baker's* E S S A Y

Concerning the CAUSE of the

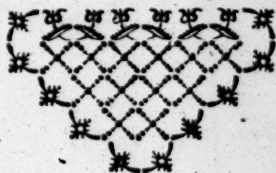
ENDEMIAL COLIC

O F

DEVONSHIRE,

Wherein the CYDER of that County is excu-
pated from the Accufation brought againft it
by that Gentleman.

---- Πολλάκι τοι καὶ μῶροσ' ἀνὴρ κατακαίειν εἶπε.



E X E T E R :

Printed by R. TREWMAN, behind the Guildhall.
M.DCC.LXVII.

I. Cornish



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T O

Sir *R^d. Warwick Bampfylde*, Bt.

A N D

John Parker, Esquire,

Who have the Honour to represent
this County in Parliament,

This ENDEAVOUR

To restore our Native NECTAR,
to its pristine Reputation,

I S,

With the greatest RESPECT,
Dedicated, by

Their most obedient

and most humble Servant,

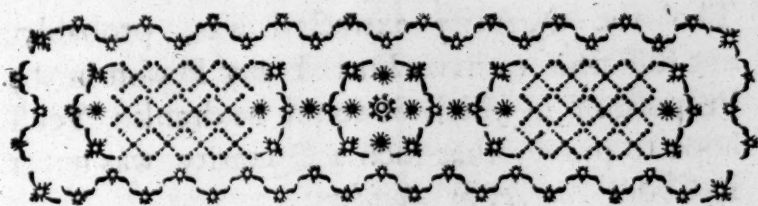
~~DANMONIENSIS.~~

J. Cornish

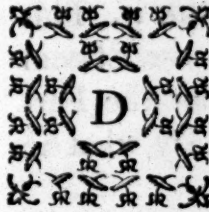
E R R A T A.

- Page 12, Line 10 dele of.
13, Line 16, for *insects*, read *infests*.
16, Line 24, for *the Disease*, read *this Disease*
20, Line 19, for *of Air*, read *of the Air*.
22, Line 28, for *delectereous*, read *deletereous*.
23, Line 4, for *the Phænomenon*, read *this Phæ-
nomenon*.





A N
A N S W E R
T O
Dr. *BAKER*'s ESSAY
O N
C Y D E R.

 Octor *BAKER*'s Essay on Cyder is certainly a Subject worth the Attention of every Native of *Devonshire* ; as it tends to bring in- to Disrepute one of the staple Commodities of this County : But as we ought, in every Publication, chiefly to regard the Design of the Writer, no Odium should be thrown on the Doctor's Character for the Injury he has done us. He seems to have taken much Pains to prove, that there is Lead dissolved in our Cyder, from which he with great Exultation infers, that *Devonshire* Cyder is Poison :
Tho'

Tho' the Quantity extracted was, probably, not sufficient to have hurted any Person in the Proportion in which it could be drank : Yet I hope to prove, that such a Quantity was never in Cyder ; *except by Accident.*

THE Juice of Apples scarcely deserves the Name of Cyder, till it has gone thro' a proper Depuration ; and then 'tis probably as healthy a Liquor, for most Constitutions, as can be procured. The Scurvy in *England* is an endemic Disorder ; all Acids are Antiscorbutics, Cyder being an Acid, is so, and therefore salutary.

It is a Matter of no small Importance to the landed Interest of this County, that this Affair should be set in a proper Light : For if the People in *London* believe that our Cyder has Lead in it, they will be afraid to drink it. This Opinion will prevail according to the Esteem which Dr. BAKER has acquired ; let the Farmer, who offers his Cyder for sale, say what he can to the contrary.

THERE is no greater Enemy to Truth than a preconceived Opinion : A Man, who wishes to tread regularly in her golden Path, must proceed dispassionately and deliberately : To do this, he must first divest himself of all Prejudices ; as it is a Remark of one of the most sensible Authors of the Age, that an Hypothesis, when



when once it has taken Root in a Man's Brain, carries all before it; and has the peculiar Faculty of turning every Thing it sees, or hears, to its own proper Food and Nourishment: How then can the Experiments of a Man labouring under so powerful an Influence, be thought conclusive?

HOWEVER, let us consider seriously, whether, from the common Method of making, there can be any Lead in Cyder. If it shall appear in the Affirmative, let us alter our Pounds. If in the Negative, let us leave them as they are. That I might be the better able to treat this Subject, I have visited most of the Pounds in this Part of the County, and can find but one Press which has any Lead in its Structure, even the Lip which conveys the Must into the Receiver is made of Iron. It must be granted that some of the Pounds in this Neighbourhood are Stone Troughs, with Rollers: There is here and there a single Stone, which makes the whole Trough; and we have a great many cutting Engines; in both which last Cases, there is not the least Particle of Lead in the Apparatus. But in the former Method, that on which Dr. BAKER lays great Stress; the Stones which compose the Trough, certainly are bound together with Iron Cramps, with a little Lead melted in at their Ends to fasten them. In the common Troughs, if there are four Pounds of
Lead

Lead 'tis the utmost; and of this, in any which I have seen, there has not been four square Inches of Superficies which could come into contact with the Pomey. I have seen many Troughs, which the Owners could never remember to be repaired, and which have probably been in use a Century or two, where the Lead did not appear to be the least fretted or diminished: One in particular, in which the Owner assured me, there was never less than an hundred Hogsheds pounded one Year with another, (and which he supposed had had no Addition for an hundred Years) I took particular Notice of, and could not perceive that the Lead had suffered in the least. Indeed the Iron is always higher than the Lead, so that the Roller seldom bears upon it. But let us suppose, that it was a fourth Part wasted and absorbed by the Apples, which were broke in it from Time to Time. There had at least been pounded in this Trough, Apples sufficient to make ten thousand Hogsheds, that is twenty five hundred Tons. A Pound to two thousand five hundred Tons is, let us say for Brevity's Sake, four Ounces to six hundred, two Ounces to three hundred, eight Drams to one hundred and fifty, four Drams to seventy five Tons, not four Grains to a Ton, not a single Grain to a Hogshed--- not one Drop of Water to the Ocean.-----This is only reasoning, like o-
ther

ther great Men, on a sandy Foundation; for the Lead did not appear to be at all decreased.

FROM the Appearance of the Lead in the Troughs which I have seen, I am inclined to think, that the Acid in Must is not sufficient to corrode that Metal. It does not follow that Must will dissolve Lead, because Vinegar, or Cyder, in a State of Fermentation, are capable of so doing. Gold is dissolvable by Acids, *Aqua fortis* is an Acid; yet *Aqua fortis* will not dissolve Gold. *Aqua regia* will dissolve Gold, tho' *Aqua fortis* will hardly touch it. If Must will dissolve Lead, why is not that dissolved which is in the Stone Troughs. In this newly expressed Juice, the acid Points are so blended and entangled in the saccharine mucilaginous Matter, that they are not able to act, at least as as a Dissolvent. Let us try if we cannot, from Dr. FRIEND's admirable mechanical Rationale of Corrosion, account for this. The Attraction of Cohesion in all Bodies is in a compound Ratio of their Gravity and Contact; and the dissolvent Power of Menstruums is equal to the Force of Attraction, and the Magnitude of their Particles. Now, suppose the Attraction of Cohesion in Lead to be equal to three, and the Moment with which the Corpuscles of the Must attack it (which is equal to their Force of Attraction) equal but to two, it will not yield to the Menstruum; and if the Magnitude of the

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Pores

Pores in Lead are equal but to four, and that of the Particles of Must equal to five, the acid Salts cannot enter them. But if the Proportion of the Menstruum and the Lead is *vice versa*, as in Cyder during Fermentation may be the Case, then will the Dissolution be effected. It is nothing at all extraordinary that distilled Vinegar should so readily dissolve Lead, and that even common Vinegar will hardly touch it, when we consider that “ in Corrosion, the
 “ more minute the Particles of the Menstruum
 “ are, the sooner they penetrate and with the
 “ greater Force: For the Motion, which Attraction produces, is always greatest and most
 “ considerable in the least Corpuscles, and is
 “ almost next to nothing in the large ones.
 “ For a small Corpuscle is carried with a considerable Velocity, when a greater, by Reason
 “ of its large Surface, is often obstructed by
 “ the ambient Fluid, and deprived of all Motion. And there is another Advantage gained
 “ by this Minuteness of the Particles, that
 “ they approach nearer the Body which is to be dissolved, without which the attractive Force
 “ will not be felt. And 'tis an Axiom in Chymistry, that Salts will not act unless dissolved.
 “ Hence those very Salts which, when in the Must, will not touch Lead, if once
 “ turned into acid Spirits, will easily penetrate and conquer it.”

How

How far this Reasoning may be just, I will not pretend to say ; but the Fact I will affirm, that the newly expressed Juice of the Apple does not dissolve, nor apparently corrode Lead : For I have seen a great many Instances, where that which is melted in at the Ends of the Iron Cramps, has been exactly in the same State in which it was cast ; (as might be evidently seen from the little Roundness of the Edges) tho' the Pound had been used a great many Years.

NEITHER is it clear, that unfermenting Cyder will readily receive a Tincture from Lead, in its metallic State. As an Endeavour to ascertain this Fact, a Bit of Lead weighing eight Grains, to the utmost Nicety, was immersed in sound Cyder four Weeks ; being weighed again, it was found to be exactly the same Weight as before ; nor did it appear to be the least corroded, tho' to give it a fair Trial, it was beat so thin, that its Superficies were increased to an Inch square, allowing for both Sides which came in Contact with the Liquor. I am not ignorant that Liquids may receive a Tincture from Metals without sensibly diminishing their Weights : But there were no Marks of any Solution of Lead in this Cyder, nor could any Precipitate be obtained by the Addition of the marine or vitriolic Acid.

THAT Cyder which is left to ferment in leaden Vessels is pernicious, is a Fact well

known in this Country ; for I can produce three Instances, where the Obstinacy of the Farmer prevailed on him, contrary to every body's Advice, to use Cisterns made of that Metal ; and those who drank the Cyder were severely punished ; probably, in a State of Fermentation, by the Collision of the Particles on one another, and the Impetus with which they strike on every Side, some of the Lead might be corroded. Also in a fermenting State, the acid of Particles may be rendered much more minute in their mutual Attraction, and Friction, on one another, than they are in the State of Must and Cyder : This the Quantity of inflammable Spirit deposited in the Lees seems in some Measure to demonstrate.

WHEN Dr. BAKER's Essay first made its Appearance with us, a facetious Gentleman wittily observed, that he was certainly in the Right. There is, says he, no Doubt, much Lead in Cyder. This he would prove from the common Custom of shooting Thrushes, &c. off the Apple Heaps in the Winter. All the Shot, which do not lodge in the Birds are stuck into the Apples. This Observation is of greater Consequence than it seems to be on the first Thought. In some plentiful Years a few Apples are sometimes left in Heaps in the Orchards till after *Christmas* ; and in frosty Weather Blackbirds, Redwings, Thrushes, and Fieldfairs

Fieldfairs, for the most Part feed on them: It is no uncommon Thing to see twenty of these Birds on one of those Heaps at a Time. One may with Safety aver, that there is scarce a Ton of Apples, left out till *December*, which has not had two or three Ounces of Shot thrown into them. It may here be observed, that Shot cannot be made without Auripigmentum, or yellow Arsenic; yet, tho' this is the Case, and that if two Ounces of Shot are bruised with a Ton of Apples, there must be more Lead in Contact with them than there can be from that which is in the Trough only, by a hundred Times (which Shot may also have lain in the fermenting Fruit some Time before they are pounded. We see that the Colic infects our People only in the Beginning of Autumn, and that no particular bad Symptoms follow the Use of the Cyder made from the Fruit left out as above. How then can we any longer suppose that the Lead, which the Muck does not dissolve in the Trough, can be the Cause of this Disorder.

WHY should we seek for another Cause of the Cyder Colic, when we consider the Power of Liquors in a State of Fermentation; and that this Disorder is never caused by Cyder which is thoroughly fermented. Cyder has been known to burst a Cask. Heat will promote the Fermentation of potable Liquors, why then may
not

not two or three Gallons of Must, fermenting in the Stomach, be equal to the most dreadful Symptoms, which it has been known to produce.

DR. BAKER says, it seems not to be without sufficient Foundation, that I have for some Time suspected that the Cause of this Colic is not to be sought for in the pure Cyder, but in some either fraudulent or accidental Adulteration. Where would he find the Cause? We know that it is the recent, the unfermented Juice of the Apple only, which does cause this Colic: Old Cyder, which is hinted to be adulterated, never causes this Disease, as the great Dr. HUXHAM has observed, 'tis new Cyder only which is hurtful, and here can be no Adulteration; for no Man after considering the above Calculation can attribute any Thing to the Lead.

INDEED, the Method which is made use of, and is found effectual by our Farmers, to prevent any evil Consequences, that may be produced from drinking impure Cyder, is in a great Measure sufficient to contradict his Opinion of the Cause of the *Devonshire* Colic. This Method is to infuse a Quantity of Ginger with their new Cyder, when they are obliged to give it to their Labourers. Gittger then is an Antidote against the *Devonshire* Colic, but Ginger is not an Antidote against the Poison of Lead, therefore the Poison of Lead is not the Cause of the *Devonshire* Colic.

It

It has never yet been supposed that Lead was the Cause of the dry Belly-ache in the *West-Indies*, yet we know that the Effects of this Disease, and of our Colic, are nearly the same. What more Reason for Surprise is there, that the specific Effect of all saturnine Preparations, and that of our Colic should be the same, than there is for that of the dry Belly-ache, which is precisely the same Disorder; and which is not caused by Lead? Lead is not the Cause of the dry Belly-ache, why then must it be the Cause of the *Devonshire* Colic.

WHEN we consider that all vegetable Juices, taken into the Stomach in large Quantities, will produce Diarrhoeas, and violent Pains in the Bowels, we are led to suppose that they generate a Flatus, and that this Flatus is the Cause of the disagreeable Symptoms which follow their Use. The Truth of this Conclusion, the Argument *A posteriori* seems loudly to proclaim.

NEW Cyder, when drank in small Quantities, is known to bring on much the same Complaint as too great a Quantity of Vegetables, but more violent; probably the Flatus, produced by the Apple acid, may be more acrimonious than that from the common culinary Herbs. That this Flatus is the Cause of the common Cyder Colics, the Effect of the Ginger, which is a Carminative, seems to argue pretty strongly.

It is a common Thing amongst us for Children to suck great Quantities of Must thro' a Reed, as it flows from the Press. I remember some Years since, a Number of Boys afflicted with a Diarrhœa from drinking Must from a Press which had no Lead in its Composition. The Apples, by the by, were here cut in one of the Engines, which have nothing at all to do with Lead. This happened to be a plentiful Year, and several People were violently afflicted with the Colic, from drinking the above Cyder, which had never touched any Lead, thro' the whole Process of making. Two-thirds of the Apples in this Part of the County are cut with Engines: And as for a Press which is cover'd with Lead, we have but one such any where in this Neighbourhood, which is that already spoke of, most of our Farmers having never heard of such a Thing.

THIS happens to be exactly such a Case as that which Dr. WALL mentions, as to mending the Press, but without the like Effect; for on the strictest Enquiry I cannot find that those People, who drank the Cyder which was made here, were more than ordinary afflicted with the Disease; probably, in the Case which this Gentleman quotes (as he says the Bed of the Press was cracked by Disuse) the Colic of the two or three Patients which he had under his Care, was caused by the vast Quantities of Must
which

which these Fellows swallowed, as this was likely a very plentiful Year.

Must is very sweet and agreeable to the Taste, and the Avidity with which some People will drink it, as it flows from the Press, is astonishing. I have been credibly informed, that three Fellows did drink in one Day near a Hoghead, two of whom died soon after, the other lived near a Year and Half, but was then seized with an epileptic Case, from which he with great Difficulty recovered. In this Case the Heat of the Stomach brought on a Fermentation; and if the Effect of the Fermentation of new Cyder shut into a Cask will extinguish the Flame of a Match, as will presently be shewn, what may it not, when confined in the intestinal Tube?

THE Drs. B--- and S--- did extract from eighteen Quart Bottles of Cyder, four Grains and half of this very poisonous Mineral, thro' which all the Water which is drank in some large Towns runs for a Mile or two, and the Inhabitants drink and do not die. Let us argue *a minori ad majorem*. This Quantity is at the Rate of a Dram to a Hoghead. There is scarce a public Pound but breaks between thirty and forty Tons one Year with another: Now if the Must did absorb the Lead in this Proportion, it must be all wasted every Season. But the Fact is otherwise: This our People know perfectly well, but the *Londoners* who buy our Cyder may

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not;

not; therefore it seems to be necessary that they should be informed. As this Experiment was made on Cyder, and not on Must, and as it is granted that, during Fermentation, a Quantity of Lead will be precipitated, we are to suppose, that the Solution of this Metal was considerably more than was ascertained.

BUT the Experiments made by the learned Doctors were not demonstrative; because a few Drops of a volatile Alkali, instilled into Cyder which has been sulphured, will produce exactly the same Phænomenon, as was observed in the *Devonshire* Cyder tried by that Criterion. The common Method of *smeetching* Cyder, is to shut up a lighted Match in a Cask partly filled with that Liquor, which must not be in the least State of Fermentation. The Match is generally made of Canvas, Part of which being not dipt in the Brimstone, is shut in between the Bung and the Cask, by which Means it is prevented from touching the Cyder: When it is burnt out, the Vessel is well agitated and filled. 'Tis pretty remarkable, that if the Cyder be observed to be the least fermenting, the Match, on being put into the Cask, will immediately be extinguished. How far this Effect resembles that which is caused by subterraneous Caverns, Damps, &c. must be left to the Curious; to whom, in my Opinion, it would not be a barren Subject. Does not this seem to favour the Hint already given concerning Flatus. We are not to wonder that Sulphur in Cyder should, by the

the Addition of a volatile Alkali, cause the same Appearance as a Solution of Saccharum Saturni, when we are told by LEMERY, that Lead is a Metal filled with Sulphur, or a bituminous Earth. Possibly the *Herefordshire* Cyder, on which the Experiment was made, had not been smeetch'd. As for the Assay of the Black Flux, and the four Grains and half of extracted Lead, our People account for this from the Carelessness of the Doctor's Servants in washing the Bottles; for Shot will stick very close between the Bulge and the Sides. The Doctor's Cyder might ferment in the Bottles, and dissolve some Part of the Lead; or this Cyder might be made from the Apples off which the Blackbirds had been killed. If neither of these were the Case, I own, that how there should be such a Quantity of the very Substance of Lead in any such Proportion of Cyder as Dr. B--- mentions, remains to me a profound Mystery.

MR. JAMES WILSON is also unfortunately quoted. According to this Gentleman's Description of the Disease called Millreek, if we may argue from Analogy, there is much Lead in *Herefordshire*, but none in *Devonshire* Cyder. For the constant Symptoms of the Lead-hill Disease he observed to be a Delirium, or Madness; and we are told by the Doctor, that a certain Gentleman had constantly under his Care an extraordinary Number of Lunatics from the County of *Hereford*. Lunacy is a constant Concomitant of the Mill-reek, but Lunacy was ne-

ver yet known to be a Symptom of the *Devonshire* Colic; therefore the Mill-reek and the *Devonshire* Colic are not parallel Diseases. Lunacy is produced by an inordinate Use of the *Herefordshire* Cyder, and Lunacy is the Effect of a Disease caused by Lead. ----- O! ye *Herefordians*, beware of *Bedlam*!

Also, the finding the Prefs at *Alphington* is against him, as there may not probably be five more such Instances in the South-West Part of this County.

A Gentleman, who is a great Dealer in *Herefordshire* Cyder, assures me that those Stone Troughs in that County, which he had seen, are precisely the same as with us, with regard to the Iron Cramps, and the Lead at their Ends. Indeed we can find no other so effectual a Method of joining the Stones; for it is certain, that Putty cannot be made to stand even the Acid of Air without White Lead in its Composition. And the cutting Engines, which have no Lead in their Structure, (and in which Two-thirds of the Apples about us are broke) are laughed at by the other Counties.

As to the Proportion of eight to one sent to the Hospital, it does not exceed that of the Cyder Drinkers in this and the other Counties, considering the Difference in the Size of our Farms and the Number of the Inhabitants.

THE Use of Lead in correcting the Acidity of the Cyder is an Art which the Farmers, whom

whom I have conversed with, seem totally ignorant of: And Cyder-Makers do not often give themselves the Trouble to read *Latin* Books, for the Sake of finding out the *German* Method of treating their sour wretched Wines.

'Tis presumed, that the Absence of Lead in Cyder, *except in the Case of Shot*, is, by this Time, sufficiently demonstrated. One Thing more remains to be done, which is to clear up this great Difficulty, *viz.* That two Causes, bearing so little Relation, should make such similar Impressions on the human Body; for it seems that the Colic of *Devonshire* is precisely the same Disease, which is the specific Effect of all saturnine Preparations. To do this, we must throw aside Sympathy, Antipathy, and the other occult Nonsense; and try what we can do on sound mechanical Principles. We must premise then that all Preparations of Lead are made originally from Acids, which closely uniting with the Particles of Lead, do form a Kind of Salt of an aculeated Form, increased in Gravity from the Lead; not much unlike Salt itself joined with Mercury, in the common Preparation of corrosive Sublimate.

THE immediate Cause of this Disease is the Flatus, which is generated by this fermenting Juice; this is plain from the Symptoms which Dr. HUXHAM observed.---*Abdomen plerumque durissimum & maxime tensum. Egrotos, ne rumperetur scilicet, anxios sollicitavit.* When this Effect is only sufficient to stimulate the Intestines to discharge

charge the offending Matter, a Diarrhœa ensues, by which the Patient is relieved: But when the Stomach and Bowels are so gorged, that the Force of the rarified Air exceeds the contractile Force of the Tubes which contain it, the Business is over done, and all this crude, gross, essential, acid Salt, or Tartar, with which the unfermented Juice of Apples abounds, is absorbed, by the distended Mouths of the Lacteals, with the rest of the Moisture of the Viscera into the Circulation, from whence proceeds indurated Fæces, and the Train of Evils which this great Man has enumerated. May we not from hence infer, that a Quantity of this crude Tartar, being impacted in the Stomach and the other Intestines, is thrust, as it were, into the Lacteals with much the same Force as the acid Salt acquires from the Lead; with which it is so intimately united as not to be separable but by a very strong Fire; as may be seen by the Revival of Saccharum Saturni into its metallic State. The Effects of these Salts upon the Blood may be uniformly the same; for Dr. HUXHAM says, *Pluribus siquidem constat experimentis, quod bilis, si nimio cum acido, vel vegetabili, vel minerali, commiscetur, viribus spoliatur, iners reddatur prorsus, et in coagulum fere abeat.*

The Objections to the delectereous Quality of Acids, when admitted into the vital Fluid, are of no Weight; because we know that they do not act immediately as such on the Blood, for Experiments have proved, that strong Vinegar
injected

injected into the Veins, will immediately destroy the Animal : But, until the Action of the Stomach on Acids can be ascertained, we must remain in the Dark as to the Phœnomenon. Probably no Acid can enter the Lacteals without some foreign Assistance.

It is somewhat remarkable that Children never, and Women seldom, feel any Inconvenience from drinking vast Quantities of new Cyder, except a Diarrhœa : This may be accounted for from the Delicacy of their Fibres, which are easily contracted : And it has been observ'd that Men of rigid Stamina and strong Constitutions, are most severely afflicted with the Cyder Colic.

I cannot conclude this short Essay, without cautioning my countrymen against the Use of boiled Cyder, which is in itself too glutinous to be salutary ; but Verdigrease is notoriously poisonous, and 'tis too common a Practice to boil down that Liquor in Brass or Copper Vessels.

THE cutting Engines also deserve the utmost that can be said in their Favour, not because there is no Lead in their Structure, (for if Apples could be broke by Musket Balls shot at them for that Purpose, the Cyder after a due Fermentation might be very safely drank) but that they break the Kernels or Pippens of the Apple, which the Troughs do not, as may be seen by that simple Experiment of burying a Piece of the *Muck* from each Pound in the Earth : From that which was broke in the Trough will proceed many Saplings, but from
the

the other very few or none. This evidently proves that in one the Pippens were, and that in the other they were not destroyed. May I not presume to hope that *Devonshire* Cyder is, by this Time, fairly exculpated from the Accusation which has lately been brought against it; for when the preceding Facts are considered, one may venture to say, that this Essay has been written on too shallow a Foundation, and that the Author has proceeded too much upon Hearsay; for what else could induce a Man of so much Erudition and Ingenuity to spend so much Time on Principles which are not only vague, but evidently erroneous.

If any Apology is necessary for the want of Method, &c. in what has been said, I answer, that, tho' the strictest Regard to Order, Elegance, and Propriety, are essentially necessary in all systematic Publications; yet, in a Work of this Kind, which is designed for the Perusal of Mankind in every Degree, and where Matter of Fact is chiefly relied on, such a Neglect may be readily excused.

As I consider myself as honestly concerned for the Interest of my native County, I neither want Applause, nor fear Censure; but think it is the indispensable Duty of every *Devonshire* Man, to exert his utmost Endeavour to convince the World of the Injustice of so injurious an Imputation on our native and most excellent Production, as certainly is the Leaden Hypothesis of Dr. BAKER.

F I N I S.

